<u>What Is Claimed Is</u>:

1. A display method for a navigation system for guiding a user to a destination, comprising the following steps of:

determining a route to the destination;

specifying a search area along the route to the destination by dividing the route from a user position to the destination into distance ranges and by defining a transversal distance from the route;

retrieving points of interest (POIs) within the search area;

displaying a list of distance ranges where each distance range shows a number of POIs retrieved within the distance range; and

displaying a list of POI names in a distance range selected by a user in an order determined by modified distance of the POIs calculated by a predetermined algorithm.

2. A display method as defined in Claim 1, wherein said step of displaying the list of distance ranges includes a step of illustrating a mark showing a current position of a user in a corresponding distance range.

3. A display method as defined in Claim 1, wherein said step of defining the search area includes a step of defining a radius of a region circle and creating a plurality of region circles consecutively on the route, and said step of listing the POI names includes a step of calculating the modified distance of each POI based on distances from two (first and second) reference points on the route in two consecutive region circles to the POI and distances from the user position to the two reference points.

4. A display method as defined in Claim 3, further comprising a step of repeating the steps of retrieving POIs within the search area and calculating the modified distance of each POI to determine the order of listing the POIs.

5. A display method as defined in Claim 3, wherein said step of calculating the modified distance of each POI is conducted by:

$$D1 = [(Q_{k-1} + d_{11}) + (Q_k + d_{12})]/2$$

where D1 is a modified distance of a particular POI, d_{11} is a distance between the first reference point and the POI, d_{12} is a distance between the second reference point and the POI, Q_{k-1} is a distance between the user position and the first reference point, and Q_k is a distance between the user position and the second reference point.

6. A display method as defined in Claim 5, wherein said first reference point is a center of one of the two consecutive region circles and the second reference point is a center of another region circle.

7. A display method as defined in Claim 6, wherein said step of calculating the modified distance of each POI includes a step of prioritizing a POI whose distance d_{11} from the first center is shorter than that of the other POIs for determining the order of listing the POIs when modified distances of two or more POIs in the consecutive two region circles are identical to one another.

8. A display method as defined in Claim 3, wherein said radius of said region circle is smaller when said route to the destination is a local street than that when the route is a freeway.

9. A display method as defined in Claim 8, wherein said radius of said region circle defines the transversal distance of said search area, thereby limiting a distance in a transversal direction of the route.

10. A display method as defined in Claim 3, wherein said step of specifying the search area includes a step of selecting an initial search range out of a plurality of distance ranges.

11. A display method as defined in Claim 6, wherein said step of creating the plurality of region circles

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includes a step of defining a center of a region circle at a position on the route at which a circumference of an immediately prior region circle intersects.

12. A display method as defined in Claim 1, wherein said step of displaying the distance range includes a step of selecting a distance range to display detailed information on the POIs in the selected distance range.

13. A display method as defined in Claim 1, wherein said step of retrieving POIs includes a step of suspending the retrieval of POIs when the user position is away from the route to the destination by more than a predetermined distance.

14. A display method as defined in Claim 1, wherein said step of displaying the number of POIs in each distance range includes a step of displaying the distance range of the POIs with a minus sign when the user position has passed a point in the distance range along the route.

15. A display method as defined in Claim 1, wherein said step of retrieving POIs includes a step of displaying a list of categories to select one of the categories of POIs to be retrieved within the search area.

16. A display apparatus for a navigation system for guiding a user to a destination, comprising:

means for determining a route to the destination;

means for specifying a search area along the route to the destination by dividing the route from a user position to the destination into distance ranges and by defining a transversal distance from the route;

means for retrieving points of interest (POIs) within the search area;

means for displaying a list of distance ranges where each distance range shows a number of POIs retrieved within the distance range; and

means for displaying a list of POI names in a distance range selected by a user in an order

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determined by modified distance of the POIs calculated by a predetermined algorithm.

17. A display apparatus as defined in Claim 16, wherein said means for displaying the list of distance ranges includes means for illustrating a mark showing a current position of a user in a corresponding distance range.

18. A display apparatus as defined in Claim 16, wherein said step defining the search area includes a step of defining a radius of a region circle and creating a plurality of region circles consecutively on the route, and said step of listing the POI names includes a step of calculating the modified distance of each POI based on distances from two (first and second) reference points on the route in two consecutive region circles to the POI and distances from the user position to the two reference points.

19. A display apparatus as defined in Claim 16, further comprising means for repeating the processes of retrieving POIs within the search area and calculating the modified distance of each POI to determine the order of listing the POIs.

20. A display apparatus as defined in Claim 18, wherein said means for calculating the modified distance of each POI conducts calculation by:

$$D1 = [(Q_{k-1} + d_{11}) + (Q_k + d_{12})]/2$$

where D1 is a modified distance of a particular POI, d_{11} is a distance between the first reference point and the POI, d_{12} is a distance between the second reference point and the POI, Q_{k-1} is a distance between the user position and the first reference point, and Q_k is a distance between the user position and the second reference point.

21. A display apparatus as defined in Claim 20, wherein said first reference point is a center of one of the two consecutive region circles and the second reference point is a center of another region circle.

22. A display apparatus as defined in Claim 21, wherein said means for calculating the modified distance of each POI includes means for prioritizing a POI whose distance d_{11} from the first center is shorter than that of the other POIs for determining the order of listing the POIs when modified distances of two or more POIs in the consecutive two region circles are identical to one another.

23. A display apparatus as defined in Claim 18, wherein said radius of said region circle is smaller when said route to the destination is a local street than that when the route is a freeway.

24. A display apparatus as defined in Claim 23, wherein said radius of said region circle defines a width of said search area, thereby limiting a distance in a transversal direction of the route.

25. A display apparatus as defined in Claim 16, wherein said means for specifying the search area includes means for selecting an initial search range out of a plurality of distance ranges.

26. A display apparatus as defined in Claim 21, wherein said means for creating the plurality of region circles includes means for defining a center of a region circle at a position on the route at which a circumference of an immediately prior region circle intersects.

27. A display apparatus as defined in Claim 16, wherein said means for displaying the distance range includes means for selecting a distance range to display detailed information on the POIs in the selected distance range.

28. A display apparatus as defined in Claim 27, wherein said means for retrieving POIs includes means for suspending the retrieval of POIs when the user position is away from the route to the destination by more than a predetermined distance.

29. A display apparatus as defined in Claim 16, wherein said means for displaying the number of POIs in each distance

range includes means for displaying the distance range of the POIs with a minus sign when the user position has passed a point in the distance range along the route. .

30. A display apparatus as defined in Claim 16, wherein said means for retrieving POIs includes means for displaying a list of categories to select one of the categories of POIs to be retrieved within the search area.

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